

## **RAW SEQUENCE LISTING**

**The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.**

Application Serial Number: 10/561,484  
Source: JEWOP  
Date Processed by STIC: 12/29/2005

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RAW SEQUENCE LISTING  
PATENT APPLICATION: US/10/561,484

DATE: 12/29/2005  
TIME: 15:02:22

Input Set : A:\10356-WO.ST25.txt  
Output Set: N:\CRF4\12292005\J561484.raw

3 <110> APPLICANT: Patkar, Shamkant  
4 Higgins, Don  
5 Fatum, Tine  
6 Vind, Jesper  
7 Madkor, Sabry  
8 Sorensen, Thomas  
10 <120> TITLE OF INVENTION: Lipolytic enzyme variants  
12 <130> FILE REFERENCE: 10470.204-US  
C--> 14 <140> CURRENT APPLICATION NUMBER: US/10/561,484  
C--> 14 <141> CURRENT FILING DATE: 2005-12-20  
14 <160> NUMBER OF SEQ ID NOS: 14  
16 <170> SOFTWARE: PatentIn version 3.3  
18 <210> SEQ ID NO: 1  
19 <211> LENGTH: 269  
20 <212> TYPE: PRT  
21 <213> ORGANISM: Thermomyces lanuginosus  
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26 1 5 10 15  
29 Ser Ala Ala Ala Tyr Cys Gly Lys Asn Asn Asp Ala Pro Ala Gly Thr  
30 20 25 30  
33 Asn Ile Thr Cys Thr Gly Asn Ala Cys Pro Glu Val Glu Lys Ala Asp  
34 35 40 45  
37 Ala Thr Phe Leu Tyr Ser Phe Glu Asp Ser Gly Val Gly Asp Val Thr  
38 50 55 60  
41 Gly Phe Leu Ala Leu Asp Asn Thr Asn Lys Leu Ile Val Leu Ser Phe  
42 65 70 75 80  
45 Arg Gly Ser Arg Ser Ile Glu Asn Trp Ile Gly Asn Leu Asn Phe Asp  
46 85 90 95  
49 Leu Lys Glu Ile Asn Asp Ile Cys Ser Gly Cys Arg Gly His Asp Gly  
50 100 105 110  
53 Phe Thr Ser Ser Trp Arg Ser Val Ala Asp Thr Leu Arg Gln Lys Val  
54 115 120 125  
57 Glu Asp Ala Val Arg Glu His Pro Asp Tyr Arg Val Val Phe Thr Gly  
58 130 135 140  
61 His Ser Leu Gly Gly Ala Leu Ala Thr Val Ala Gly Ala Asp Leu Arg  
62 145 150 155 160  
65 Gly Asn Gly Tyr Asp Ile Asp Val Phe Ser Tyr Gly Ala Pro Arg Val  
66 165 170 175  
69 Gly Asn Arg Ala Phe Ala Glu Phe Leu Thr Val Gln Thr Gly Gly Thr  
70 180 185 190  
73 Leu Tyr Arg Ile Thr His Thr Asn Asp Ile Val Pro Arg Leu Pro Pro  
74 195 200 205

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77 Arg Glu Phe Gly Tyr Ser His Ser Ser Pro Glu Tyr Trp Ile Lys Ser  
78 210 215 220  
81 Gly Thr Leu Val Pro Val Thr Arg Asn Asp Ile Val Lys Ile Glu Gly  
82 225 230 235 240  
85 Ile Asp Ala Thr Gly Gly Asn Asn Gln Pro Asn Ile Pro Asp Ile Pro  
86 245 250 255  
89 Ala His Leu Trp Tyr Phe Gly Leu Ile Gly Thr Cys Leu  
90 260 265  
93 <210> SEQ ID NO: 2  
94 <211> LENGTH: 286  
95 <212> TYPE: PRT  
96 <213> ORGANISM: Fusarium oxysporum  
98 <400> SEQUENCE: 2  
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101 1 5 10 15  
104 Gln His Gly Ala Ala Ala Tyr Cys Asn Ser Glu Ala Ala Gly Ser  
105 20 25 30  
108 Lys Ile Thr Cys Ser Asn Asn Gly Cys Pro Thr Val Gln Gly Asn Gly  
109 35 40 45  
112 Ala Thr Ile Val Thr Ser Phe Val Gly Ser Lys Thr Gly Ile Gly Gly  
113 50 55 60  
116 Tyr Val Ala Thr Asp Ser Ala Arg Lys Glu Ile Val Val Ser Phe Arg  
117 65 70 75 80  
120 Gly Ser Ile Asn Ile Arg Asn Trp Leu Thr Asn Leu Asp Phe Gly Gln  
121 85 90 95  
124 Glu Asp Cys Ser Leu Val Ser Gly Cys Gly Val His Ser Gly Phe Gln  
125 100 105 110  
128 Arg Ala Trp Asn Glu Ile Ser Ser Gln Ala Thr Ala Ala Val Ala Ser  
129 115 120 125  
132 Ala Arg Lys Ala Asn Pro Ser Phe Asn Val Ile Ser Thr Gly His Ser  
133 130 135 140  
136 Leu Gly Gly Ala Val Ala Val Leu Ala Ala Asn Leu Arg Val Gly  
137 145 150 155 160  
140 Gly Thr Pro Val Asp Ile Tyr Thr Tyr Gly Ser Pro Arg Val Gly Asn  
141 165 170 175  
144 Ala Gln Leu Ser Ala Phe Val Ser Asn Gln Ala Gly Gly Glu Tyr Arg  
145 180 185 190  
148 Val Thr His Ala Asp Asp Pro Val Pro Arg Leu Pro Pro Leu Ile Phe  
149 195 200 205  
152 Gly Tyr Arg His Thr Thr Pro Glu Phe Trp Leu Ser Gly Gly Gly Gly  
153 210 215 220  
156 Asp Lys Val Asp Tyr Thr Ile Ser Asp Val Lys Val Cys Glu Gly Ala  
157 225 230 235 240  
160 Ala Asn Leu Gly Cys Asn Gly Gly Thr Leu Gly Leu Asp Ile Ala Ala  
161 245 250 255  
164 His Leu His Tyr Phe Gln Ala Thr Asp Ala Cys Asn Ala Gly Gly Phe  
165 260 265 270  
168 Ser Trp Arg Arg Tyr Arg Ser Ala Glu Ser Val Asp Lys Arg  
169 275 280 285

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172 <210> SEQ ID NO: 3  
173 <211> LENGTH: 265  
174 <212> TYPE: PRT  
175 <213> ORGANISM: Absidia reflexa  
177 <400> SEQUENCE: 3  
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180 1 5 10 15  
183 Lys Ala His Thr Phe Tyr Thr Ala Leu Ser Ala Asn Ala Tyr Cys Arg  
184 20 25 30  
187 Thr Val Ile Pro Gly Gly Arg Trp Ser Cys Pro His Cys Gly Val Ala  
188 35 40 45  
191 Ser Asn Leu Gln Ile Thr Lys Thr Phe Ser Thr Leu Ile Thr Asp Thr  
192 50 55 60  
195 Asn Val Leu Val Ala Val Gly Glu Lys Glu Lys Thr Ile Tyr Val Val  
196 65 70 75 80  
199 Phe Arg Gly Thr Ser Ser Ile Arg Asn Ala Ile Ala Asp Ile Val Phe  
200 85 90 95  
203 Val Pro Val Asn Tyr Pro Pro Val Asn Gly Ala Lys Val His Lys Gly  
204 100 105 110  
207 Phe Leu Asp Ser Tyr Asn Glu Val Gln Asp Lys Leu Val Ala Glu Val  
208 115 120 125  
211 Lys Ala Gln Leu Asp Arg His Pro Gly Tyr Lys Ile Val Val Thr Gly  
212 130 135 140  
215 His Ser Leu Gly Gly Ala Thr Ala Val Leu Ser Ala Leu Asp Leu Tyr  
216 145 150 155 160  
219 His His Gly His Ala Asn Ile Glu Ile Tyr Thr Gln Gly Gln Pro Arg  
220 165 170 175  
223 Ile Gly Thr Pro Ala Phe Ala Asn Tyr Val Ile Gly Thr Lys Ile Pro  
224 180 185 190  
227 Tyr Gln Arg Leu Val His Glu Arg Asp Ile Val Pro His Leu Pro Pro  
228 195 200 205  
231 Gly Ala Phe Gly Phe Leu His Ala Gly Glu Glu Phe Trp Ile Met Lys  
232 210 215 220  
235 Asp Ser Ser Leu Arg Val Cys Pro Asn Gly Ile Glu Thr Asp Asn Cys  
236 225 230 235 240  
239 Ser Asn Ser Ile Val Pro Phe Thr Ser Val Ile Asp His Leu Ser Tyr  
240 245 250 255  
243 Leu Asp Met Asn Thr Gly Leu Cys Leu  
244 260 265  
247 <210> SEQ ID NO: 4  
248 <211> LENGTH: 264  
249 <212> TYPE: PRT  
250 <213> ORGANISM: Absidia corymbifera  
252 <400> SEQUENCE: 4  
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255 1 5 10 15  
258 Ala His Thr Phe Tyr Thr Ala Leu Ser Ala Asn Ala Tyr Cys Arg Thr  
259 20 25 30  
262 Val Ile Pro Gly Gly Gln Trp Ser Cys Pro His Cys Asp Val Ala Pro

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263 35 40 45  
 266 Asn Leu Asn Ile Thr Lys Thr Phe Thr Thr Leu Ile Thr Asp Thr Asn  
 267 50 55 60  
 270 Val Leu Val Ala Val Gly Glu Asn Glu Lys Thr Ile Tyr Val Val Phe  
 271 65 70 75 80  
 274 Arg Gly Thr Ser Ser Ile Arg Asn Ala Ile Ala Asp Ile Val Phe Val  
 275 85 90 95  
 278 Pro Val Asn Tyr Pro Pro Val Asn Gly Ala Lys Val His Lys Gly Phe  
 279 100 105 110  
 282 Leu Asp Ser Tyr Asn Glu Val Gln Asp Lys Leu Val Ala Glu Val Lys  
 283 115 120 125  
 286 Ala Gln Leu Asp Arg His Pro Gly Tyr Lys Ile Val Val Thr Gly His  
 287 130 135 140  
 290 Ser Leu Gly Gly Ala Thr Ala Val Leu Ser Ala Leu Asp Leu Tyr His  
 291 145 150 155 160  
 294 His Gly His Asp Asn Ile Glu Ile Tyr Thr Gln Gly Gln Pro Arg Ile  
 295 165 170 175  
 298 Gly Thr Pro Glu Phe Ala Asn Tyr Val Ile Gly Thr Lys Ile Pro Tyr  
 299 180 185 190  
 302 Gln Arg Leu Val Asn Glu Arg Asp Ile Val Pro His Leu Pro Pro Gly  
 303 195 200 205  
 306 Ala Phe Gly Phe Leu His Ala Gly Glu Glu Phe Trp Ile Met Lys Asp  
 307 210 215 220  
 310 Ser Ser Leu Arg Val Cys Pro Asn Gly Ile Glu Thr Asp Asn Cys Ser  
 311 225 230 235 240  
 314 Asn Ser Ile Val Pro Phe Thr Ser Val Ile Asp His Leu Ser Tyr Leu  
 315 245 250 255  
 318 Asp Met Asn Thr Gly Leu Cys Leu  
 319 260  
 322 <210> SEQ ID NO: 5  
 323 <211> LENGTH: 269  
 324 <212> TYPE: PRT  
 325 <213> ORGANISM: Rhizomucor miehei  
 327 <400> SEQUENCE: 5  
 329 Ser Ile Asp Gly Gly Ile Arg Ala Ala Thr Ser Gln Glu Ile Asn Glu  
 330 1 5 10 15  
 333 Leu Thr Tyr Tyr Thr Thr Leu Ser Ala Asn Ser Tyr Cys Arg Thr Val  
 334 20 25 30  
 337 Ile Pro Gly Ala Thr Trp Asp Cys Ile His Cys Asp Ala Thr Glu Asp  
 338 35 40 45  
 341 Leu Lys Ile Ile Lys Thr Trp Ser Thr Leu Ile Tyr Asp Thr Asn Ala  
 342 50 55 60  
 345 Met Val Ala Arg Gly Asp Ser Glu Lys Thr Ile Tyr Ile Val Phe Arg  
 346 65 70 75 80  
 349 Gly Ser Ser Ser Ile Arg Asn Trp Ile Ala Asp Leu Thr Phe Val Pro  
 350 85 90 95  
 353 Val Ser Tyr Pro Pro Val Ser Gly Thr Lys Val His Lys Gly Phe Leu  
 354 100 105 110  
 357 Asp Ser Tyr Gly Glu Val Gln Asn Glu Leu Val Ala Thr Val Leu Asp

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358 115 120 125  
 361 Gln Phe Lys Gln Tyr Pro Ser Tyr Lys Val Ala Val Thr Gly His Ser  
 362 130 135 140  
 365 Leu Gly Gly Ala Thr Ala Leu Leu Cys Ala Leu Asp Leu Tyr Gln Arg  
 366 145 150 155 160  
 369 Glu Glu Gly Leu Ser Ser Ser Asn Leu Phe Leu Tyr Thr Gln Gly Gln  
 370 165 170 175  
 373 Pro Arg Val Gly Asp Pro Ala Phe Ala Asn Tyr Val Val Ser Thr Gly  
 374 180 185 190  
 377 Ile Pro Tyr Arg Arg Thr Val Asn Glu Arg Asp Ile Val Pro His Leu  
 378 195 200 205  
 381 Pro Pro Ala Ala Phe Gly Phe Leu His Ala Gly Glu Glu Tyr Trp Ile  
 382 210 215 220  
 385 Thr Asp Asn Ser Pro Glu Thr Val Gln Val Cys Thr Ser Asp Leu Glu  
 386 225 230 235 240  
 389 Thr Ser Asp Cys Ser Asn Ser Ile Val Pro Phe Thr Ser Val Leu Asp  
 390 245 250 255  
 393 His Leu Ser Tyr Phe Gly Ile Asn Thr Gly Leu Cys Thr  
 394 260 265  
 397 <210> SEQ ID NO: 6  
 398 <211> LENGTH: 271  
 399 <212> TYPE: PRT  
 400 <213> ORGANISM: Rhizopus oryzae  
 402 <400> SEQUENCE: 6  
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 408 Gln Glu Phe Thr Lys Tyr Ala Gly Ile Ala Ala Thr Ala Tyr Cys Arg  
 409 20 25 30  
 412 Ser Val Val Pro Gly Asn Lys Trp Asp Cys Val Gln Cys Gln Lys Trp  
 413 35 40 45  
 416 Val Pro Asp Gly Lys Ile Ile Thr Thr Phe Thr Ser Leu Leu Ser Asp  
 417 50 55 60  
 420 Thr Asn Gly Tyr Val Leu Arg Ser Asp Lys Gln Lys Thr Ile Tyr Leu  
 421 65 70 75 80  
 424 Val Phe Arg Gly Thr Asn Ser Phe Arg Ser Ala Ile Thr Asp Ile Val  
 425 85 90 95  
 428 Phe Asn Phe Ser Asp Tyr Lys Pro Val Lys Gly Ala Lys Val His Ala  
 429 100 105 110  
 432 Gly Phe Leu Ser Ser Tyr Glu Gln Val Val Asn Asp Tyr Phe Pro Val  
 433 115 120 125  
 436 Val Gln Glu Gln Leu Thr Ala His Pro Thr Tyr Lys Val Ile Val Thr  
 437 130 135 140  
 440 Gly His Ser Leu Gly Gly Ala Gln Ala Leu Leu Ala Gly Met Asp Leu  
 441 145 150 155 160  
 444 Tyr Gln Arg Glu Pro Arg Leu Ser Pro Lys Asn Leu Ser Ile Phe Thr  
 445 165 170 175  
 448 Val Gly Gly Pro Arg Val Gly Asn Pro Thr Phe Ala Tyr Tyr Val Glu  
 449 180 185 190  
 452 Ser Thr Gly Ile Pro Phe Gln Arg Thr Val His Lys Arg Asp Ile Val

**VERIFICATION SUMMARY**  
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L:14 M:270 C: Current Application Number differs, Replaced Current Application No  
L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date